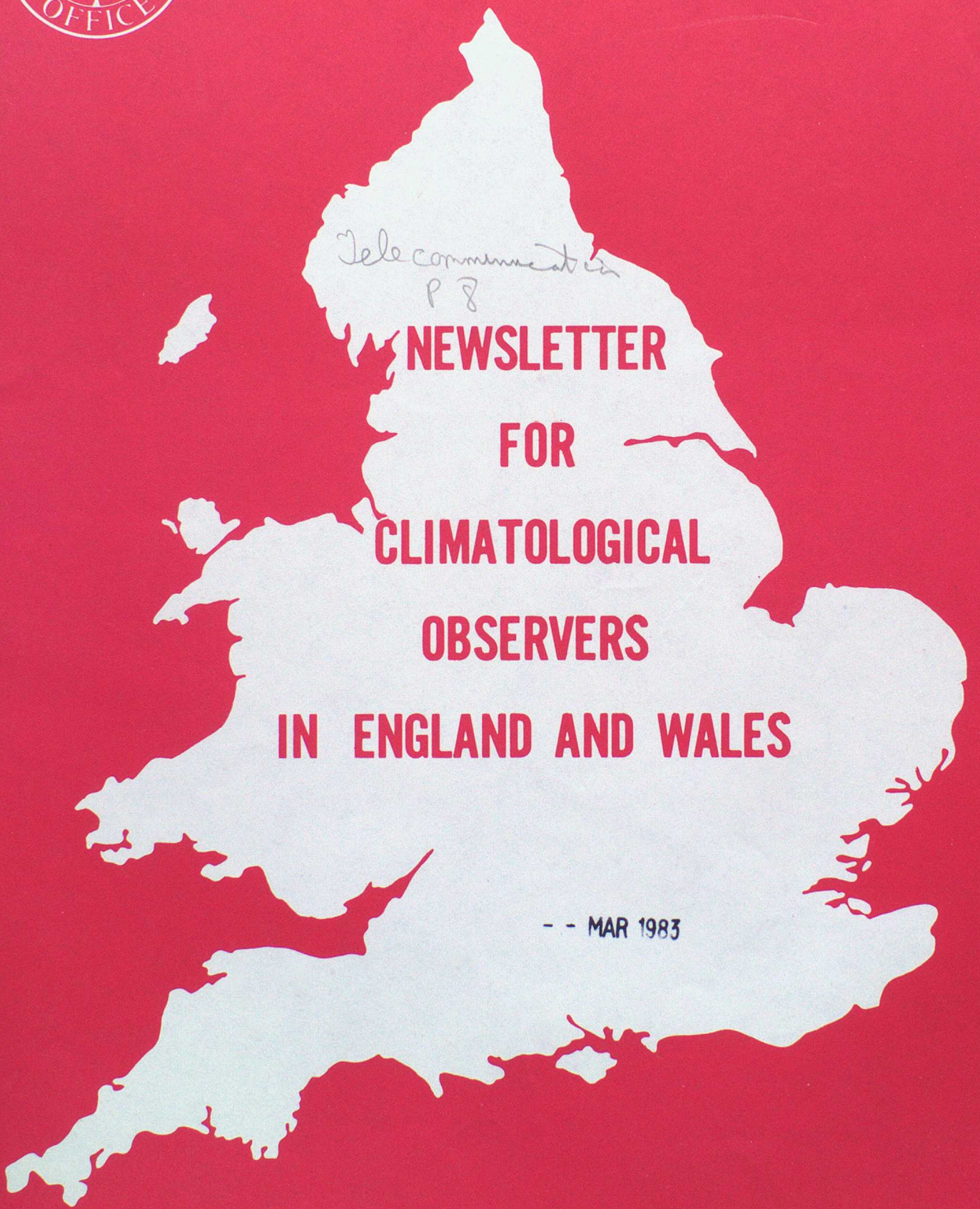
METEOROLOGICAL OFFICE

Telecommunications
P 8

NEWSLETTER FOR CLIMATOLOGICAL OBSERVERS IN ENGLAND AND WALES



- - MAR 1983

METEOROLOGICAL OFFICE

NEWSLETTER

FOR

CLIMATOLOGICAL OBSERVERS

IN

ENGLAND AND WALES

NO 10

MARCH 1983

Produced by:

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Observational Requirements
and Practices Branch
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Editorial

At the moment of writing there are still some vacancies for observers on training courses to be held at Meteorological Office College, Shinfield Park, Reading on the following dates:

18-22 April 1983

13-17 June 1983

May I remind observers that there is no charge for these courses, accommodation and food also being provided free of charge, so if anyone is interested in reserving a place, please contact George Swift, here at Meteorological Office Met O 1c(3), Eastern Road, Bracknell, Berkshire RG12 2UR Tel No. Bracknell (STD 0344) 20242 Ext 2266. I should mention, perhaps, that there is one stipulation - the courses are only for those people at our recognised co-operating stations. George Swift told me he had recently received a letter from a lady who thought that the course would be very useful as she had a degree and was teaching, but unfortunately we had to decline as the lady had no connection with the voluntary network.

We are pleased to include in this issue two more articles of general interest - the second extract from Mr R J Ogden's article on the Climatological Network and the third extract from "An Introduction to the Work of the Meteorological Office".

W M Longworth

24 January 1983

HQ News

We reported in the last Newsletter that Mr J W Davies had taken over from Mr L R Walker as head of Data and Publications in Met O 3a. John Davies has now moved to another post and his replacement is Mr J Bradford whom we welcome to our Headquarters team.

We were hoping to tell observers that the new (4th) edition of the Observers Handbook (Met O 933) was on its way to all stations, but at the moment we are still awaiting confirmation of the books distribution. Every co-operating station will of course receive a free copy for the observers use - the book is on sale to the general public from HMSO and Government Bookshops price £13.95 per copy.

When received, observers should retain the 3rd Edition (Met O 805) as there are some references, for example, the mercury barometer and the Dines Pressure Tube Anemometer which have been omitted from the latest edition.

News of Stations

It was with great regret that we learnt of the death of Sir Adrian Beecham, Bart, in September 1982. Sir Adrian had been a voluntary observer for over 48 years, maintaining his own climatological station at Shipston-on-Stour, Warwickshire for much of that time. He was presented with a long service award of a barograph in 1978.

Amongst other stations to close since our last newsletter was Oaken, near Wolverhampton, Staffs run by Mr I H Houston who has recently retired. Mr Houston is moving to another part of the country and hopes to recommence co-operation at a later date. Oaken was another privately run station and like Shipston-on-Stour began reporting in the early 1940s.

Garston near Watford, the climatological station at the Building Research Centre, was another station with a long period of co-operation to terminate and two stations in Devon, Totnes and Delabole also closed.

We are delighted to welcome two new stations, both privately run, to our co-operating network. These are Eaglesfield, near Cockermouth, Cumbria and Velindre, Brecon, Powys.

Who's Who in Met O 1 - Dave Hebblethwaite

Started in Meteorological Office as a Scientific Assistant in 1958 immediately after leaving school. Employed in research and observing at Porton Down, Bracknell and Cardington. Most noteworthy event probably narrow escape in 1960 when 1500 feet of steel cable fell to ground after aircraft sliced through barrage balloon cable (at Cardington).

Promoted to Scientific Officer in 1973 on completion of forecasting course and subsequent training at stations such as London Weather Centre and Heathrow. Posted to Fairford where forecasting duties were dominated by the Concorde airworthiness trials. Subsequently promoted to Higher Scientific Officer.

After spells at other stations during 1976 and 1977 three years were spent forecasting at an RAF station in Germany before arriving back at Bracknell to begin current job. This entails running network of UK auxiliary stations which provide regular weather reports mainly as an aid to forecasting.

Married since 1964, daughters aged nine and twelve years.

2nd extract from Mr R J Ogdens article

CO-OPERATING OBSERVERS AND THE CLIMATOLOGICAL NETWORK

reproduced from the meteorological magazine, 197, 1978, pp 209-218

DEVELOPMENT OF THE NETWORK

The growth of the Network from its inception to the present day is shown in Table I. It is remarkable that roughly a quarter of the stations that contributed to the first Monthly Weather Report in 1884 are still submitting returns 94 years later.

These stations are:

Aberdeen	Hastings	Rothamsted
Armagh	Liverpool (Bidston)	Scarborough
Cambridge	Marlborough	Scilly
Douglas	Nairn	Stonyhurst*
Durham	Oxford	York*
Falmouth	Plymouth	

* These stations have closed since this article was written.

A further 13 stations which are still reporting joined the Network before the turn of the Century:

Braemar	Glenlee	Sheffield
Cockle Park	Lowestoft	Southport
Colwyn Bay	Marchmont	Torquay
Eastbourne	Margate	
Fort Augustus	Rhyl	

TABLE I - THE UK CLIMATOLOGICAL NETWORK

Year	Met. Office stations	Auxiliary synoptic stations	Co-operative climatological stations	Total
1884	1	29	36	66
1890	1	30	46	77
1895	1	30	47	78
1900	1	25	48	74
1905	1	26	179	206
1910	3	30	209	242
1914	4	31	304	339
1920	20	26	274	320
1925	20	27	289	336
1930	22	27	298	347
1935	25	24	316	365
1938	25	25	313	363
1946	84	20	324	428
1950	77	23	347	447
1955	80	24	393	497
1959	73	25	453	551
1965	71	48	473	592
1970	73	57	526	656
1975	72	59	511	642
1977	69	56	499	624
1982	75	47	468	590

Notes:

1. Meteorological Office stations include outstations and observations.

2. Co-operating stations include Health Resort and Agro-meteorological stations.

3. Stations in Southern Ireland were included in the Network until the Second World War, i.e. in the above Table for all years to 1938.

4. Figures refer to 31 December in each year.

As may be seen from the above lists, a number of municipal authorities had joined the Network before 1900. Sensing an increasing awareness of the advertising value of references in the national press to weather at the resorts, the Meteorological Office decided in 1912 to introduce the Health Resort scheme. Local authorities were encouraged to set up climatological stations which would be inspected annually to ensure that common high standards of observing were maintained; in exchange for submission of the normal climatological returns, the Office undertook to accept evening telegrams from the resorts and from these to prepare a daily bulletin of approved readings for the Press. Except that since 1976 the evening reports have been collected by telephone, the scheme still operates as set up in 1912 and the climatological returns make a useful contribution to the data received from the Network.

Agricultural interest in climatology had also been apparent from the early days (for example Rothamsted), but it was not until 1924 that the Office took steps to organize this for the benefit of the Network. The interest in observing at agricultural colleges and research institutions arose from the need to monitor environmental conditions in connection with experimental work in crop management and animal husbandry: there were clear advantages for them in achieving uniform standards throughout the country, and these could most readily be obtained through the regular Meteorological Office inspections which were offered in exchange for routine climatological returns. A new class of Crop Weather (now called Agro-meteorological) stations was therefore introduced, and these have become a significant part of the Network. Although not included in this category, an important group of stations with somewhat similar interests has also been established by the Forestry Commission, Nature Conservancy and Field Studies Council.

For the first 35 years, the synoptic stations that were also part of the Climatological Network were almost entirely Auxiliary, the Meteorological Office contributing data only from a few Observations. However, the applications of meteorology to artillery and flying became evident during the First World War, and from 1920, climatological returns were received from the meteorological offices (then called distributive stations) that had been established at Army units and airfields. Many new meteorological offices were needed to support the Royal Air Force during the Second World War and these too made returns. Fortunately the sharp post-war decrease in the number of offices associated with the Royal Air Force has been partly offset by the increase in those serving civil aviation and the general public, and the Office now makes a very substantial contribution to the total amount of data collected from the Network. Whereas the basic information supplied by all Network stations consists of readings made daily at 09 GMT, these alone give little indication of the important diurnal variations of weather; to obtain knowledge of that, hourly or at least 3-hourly observations are needed, and with the exception of a handful of Auxiliary stations, only the continuously manned meteorological offices can supply these.

(To be continued)

SF

A NEW EDITION OF THE "OBSERVER'S HANDBOOK"

This newsletter will probably coincide with the availability of a new edition of the Observer's Handbook. A copy of the new Handbook will be supplied free of charge to all climatological stations from our Forms Store at Woolwich.

The new edition will be the 4th "Observer's Handbook" although many earlier editions were published under the original title "Meteorological Observer's Handbook" dating back to the days of World War I.

Work on the new book commenced in the mid-1970's, but has been frustrated by changes of observing procedures, changes in instrumentation, changes by the World Meteorological Organization in reporting procedures, printing delays, and, of course, increasing costs. All these add up to a book which on publication, is still not as up-to-date as we would have liked.

Observers at climatological stations will see that the traditional method of measuring wet bulb temperature has been replaced by a method using a tubular wick. At the time of the book going to press it was thought that all trials had almost been completed and problems nearly all resolved. However we are still not quite ready for the change, and observers should continue using the familiar muslin and wick. You will be advised in good time before the change over is to be made, when supplies of the tubular wick and final instrumentations for its fitting will be issued.

The 4th edition contains no reference to the Kew mercury barometer or the Dines Pressure Tube anemograph. Only a few stations continue to use these instruments and such stations should retain their 3rd edition of the Observer's Handbook which explains these instruments in detail.

Two changes too late to be included in the book - the Meteorological Office is reverting to the Mark 2 cup Generator anemometer and the Mark 1 tilting syphon raingauge. The cost of the Mark 4 anemometer system has now virtually caught up with the Mark 2. As the Mark 2 is the most weather-resistant in a coastal environment this will be the only system stocked by ourselves in the future as a means of streamlining stocks and keeping expenditure to a minimum. The Mark 2 tilting syphon raingauge has also out-priced itself and we shall in future use only the Mark 1, despite its slower syphoning time.

Many of the photographs in the 4th edition are new. Some instruments were photographed for the book by the RAF Photographic Section at Leuchars, Fife, while Mr R.K. Pilsbury supplied most of the cloud photographs. Ken Pilsbury, who retired from the Meteorological Office about 10 years ago, is an enthusiastic photographer, and many of his photographs were used in the new Met Office colour publication "Met O 716 (1982) Cloud Types for Observers" which is published by HMSO and available through booksellers at £9.50.

C S Broomfield

THE WORKING GROUP ON THE NATIONAL RAINFALL ARCHIVE

(Meteorological Office & National Water Council)

During 1982 representatives from the Hydrometeorological Branch of the Meteorological Office and the Directors of Operations Group of the National Water Council met to review the arrangements for the national archive of rainfall data, insofar as both the Meteorological Office (as the State Meteorological Service) and the Water Industry (e.g. regional Water Authorities, Water Companies, etc.) were concerned.

Much of the rainfall data nowadays reaches the Meteorological Office via local Water Authority sources, and a high proportion of straight-forward rainfall measurements come from pumping stations, sewerage works, reservoirs, etc.

Over the years there has been varying amounts of duplication of effort, and from certain parts of the country there is an excess of effort in collecting and archiving the data, whilst in other parts there are rather surprising gaps in the network of raingauges. Thus, action is being taken during 1983 to 'rationalise' the rainfall reporting network in England & Wales, with the Meteorological Office recognised as the central archiving authority.

The synoptic reporting stations, along with the climatological, agro-met and other types of station sending climatological returns to Met.O.3 at Bracknell, form a key basic network in the proposed rationalised scheme, and the prompt arrival of the Metforms 3208 each month will play an increasingly important role. Those of you who have attended co-operating observers courses at the Meteorological Office College, and to whom I have had the pleasure of talking about the work of Met.O.8, will know how important we regard the data from the 'climatological' network of stations, for their regular 7-day-a-week data provide a base from which the whole of the rainfall station data quality control is operated.

May I please encourage you, not only to continue the high standard of observations, but also to despatch the returns as soon as possible each month, so that they reach Bracknell within 7-10 days after the month end.

Many stations may be duplicating their rainfall figures to their local Water Authority office. Please continue to do this, but should that local office write to you asking you to discontinue the practice, it will not be because they are no longer interested in your data but because they will be getting the data from our central data archive at Bracknell instead, as part of a data feed-back package agreed with the authority.

KENNETH WOODLEY
Hydrometeorological Data Systems

Met.O.8b
Bracknell

THE THIRD EXTRACT FROM:
"AN INTRODUCTION TO THE WORK OF THE METEOROLOGICAL OFFICE"

Preparation of weather messages

Internationally-agreed specifications and codes are used which enable a large amount of data to be conveyed in a concise form understood by all meteorologists. These codes present the data in groups of 5 figures. In the following example all the meteorological details of a surface observation are condensed into 63 figures:

03776 41470 82312 10077 20064 40007 58012 72165 8682/ 333 81812 85656 88458

Numerals under-lined are indicators.

03776 International station number - Gatwick Airport.
41470 No precipitation data; manned station, weather reported; lowest cloud 300 to 600m AGL; visibility 20 km.
82312 Total cloud amount8/8; surface wind from 230 degrees 12 knots.
10077 Air temperature 7.7 degrees C.
20064 Dew-point 6.4 degrees C.
40007 Corrected mean sea level pressure 1000.7 millibars.
58012 8012 decode as a fall of pressure of 1.2 mbs over the past 3 hours.
72165 Present weather, 21, rain during the last hour; past weather, 6, rain in previous 1, 3 or 6 hours (depending on time of observation) and changed to 5, drizzle, during the time interval concerned.
8682/ Total low cloud 6/8 and type cumulus and stratocumulus; type of medium cloud altostratus; type of high cloud unknown.
333 Indicator group.
81812 1/8 cumulus base 1200 ft AGL.
85656 5/8 stratocumulus base 6000 ft AGL.
88458 8/8 altostratus base 8000 ft AGL.

Reports from ships and radio-sonde stations are also in a 5-figure group format. Many forecasts, particularly those for aviation can be transmitted in a combination of figure codes and abbreviations. Each report or bulletin has a preamble to indicate the time, type and origin of the data.

Telecommunications

To meet WMO requirements a Global Telecommunications System has been set up. The Main Trunk Circuit connects all Regional Telecommunications Hubs and the World Meteorological Centres at Washington, Moscow and Melbourne. Bracknell is one Regional Hub, responsible for the passage of data between Washington and Continental Europe via Paris and Offenbach (Germany).

This international circuit comprises a sequence of high speed computer-to-computer links, using communications satellites for the trans-oceanic sections. The Bracknell Automated Telecommunications Centre contains message switching and storage computers programmed to handle data on a strict schedule. Quality control checks are built in and bulletins can be compiled automatically for specific purposes or users.

UK domestic traffic is handled primarily by teleprinter links from outstations, via regional collecting centres, to Bracknell. A complete set of UK Observations are at Bracknell by about 10 minutes past the hour of observation; they are then broadcast to all stations by teleprinter and a selection are transmitted also on the international circuit.

A large amount of data is also transmitted in plotted or analysed form on charts by facsimile equipment, including much of the chart output from the main computer. Analysis and forecast charts are exchanged internationally both on the Main Trunk Circuit and by radio-facsimile. In a typical 24-hour period Bracknell handled over 3.3 million 5 figure groups and over 1300 charts.

The Meteorological Office's plans for its Cyber 205 computer.

The Meteorological Office has four primary tasks for its recently acquired Cyber 205 computer, probably the most powerful "number-cruncher" currently available. All four tasks involve the application of numerical models to meteorological problems.

The first benefit of the new computer will be an improved and extended system for numerical weather prediction up to a few days ahead. Improvements over present numerical forecasts will come from an enlarged forecast domain (extending well into the Southern Hemisphere), from increased horizontal and vertical resolution, and by the use of new methods of data analysis which attempt to extract the maximum possible information from all relevant observations.

Then there are two projects which seek to extend the Office's forecasting capabilities on space and time scales which are of great importance yet are without adequate numerical support at present. These two projects are (a) forecasting the general character of the weather a month ahead, which will be supported by studies based on 30-50 day integrations of a global model, and (b) forecasting the mesoscale (10-100 km) detail of the weather a few hours ahead, which will be tackled with the aid of a fine scale numerical model of the U.K. region, with special emphasis on boundary layer information.

The fourth task is climate research, and this is the one which will make the biggest demands on the Cyber 205's resources, and may well be its most important benefit in the long term, allowing the Office to make a major contribution to the World Climate Research Programme. For this work a global atmospheric model will be integrated through many years (perhaps 50) with full seasonal variations. Ocean and sea-ice models will be added to form a coupled climate system which will then be tested and improved in an effort to obtain increasingly accurate simulations of the present climate, including interannual variability. From this basis investigations will be made of possible mechanisms of climate change, with first priority given to studies of the effects of increased carbon dioxide content of the atmosphere.

(To be continued)

KW

THE MET-MAN COMETH

Plans are now being made for a considerable number of co-operating Climatological stations in England and Wales to be visited by Met. Office staff.

Each year a similar programme is prepared as we are not able to arrange to visit every station every year. Those stations known as Climatological stations are visited every three years, so that from the last visit you will know when the 'Met. Man' is due to call again. The Agro-Met and Health Resort stations are visited every two years. There will be occasions when this interval could be varied if, for instance, advice was needed for a change of site of the enclosure or the resiting of a sunshine recorder. As far as possible we try to keep to this programme which is that recommended by the World Meteorological Organisation centred in Geneva.

Although these visits are labelled 'inspections' the Inspector should be looked upon as an advisor and one who will be pleased to answer any questions on instrumentation or observing techniques. These Inspectors are experienced Members of Staff, well versed in all matters pertaining to a climatological station. The purpose of his visit is not intended to be one of criticism but rather to encourage interest in recording the weather and to raise the standard of observing and instrumental accuracy. Thermometers are checked to ensure there are no obvious errors which can be corrected viz: bubbles in alcohol thermometers.

Any recommendations made by the Inspector are for the benefit of the station, the Met. Office and ultimately the Community at large. The Civil Engineering and Construction industries make use of data supplied by the Met. Office when a project requires the frequency, in a particular area, of fog, frost or high winds. Weather data are also needed to settle some insurance claims. For these and other enquiries, the Met. Office is striving to improve the accuracy of data received to provide the best service to the general public.

Desiree Allen

WEATHER IN THE UNITED KINGDOM JULY - DECEMBER 1982

In marked contrast to the preceding month July was dry almost everywhere and over Northern Ireland, some central parts of England and in the Glasgow area it was the driest so far this century. The first half of the month, however, was rather changeable and occasionally thundery, particularly during the second week over South Wales and south-west England where severe flooding was reported locally on the 12th; at Bruton in Somerset, scene in 1917 of the second heaviest daily fall on record in the United Kingdom, 113 mm of rain fell in 16 hours. It was also very warm at times during the second and last weeks of the month; on the 9th maxima of 30.3 and 30.2°C were recorded at Faversham in Kent and at March in Cambridgeshire. Very warm, humid weather continued into early August and thunderstorms occurred widely between the 3rd and 6th. The storms were severe in places with flooding; on the 4th 124 mm of rain fell in three hours at Ely in Cambridgeshire while on the 3rd the temperature had reached 30.7°C at Morley St Botolph in Norfolk. It became cooler from the north during the second week and the rest of the month was mostly cool and rather windy, almost autumnal, with showers or longer periods of rain at times. The rain was heavy on some occasions, particularly in the west; on the 12th 61.5 mm were recorded at Cwmbargoed in Merthyr Tydfil, Mid Glamorgan. Early in September the weather improved, becoming mainly dry, sunny and warm, and around mid-month hot, especially in the south and east. On the 17th maxima of 28.6 and 28.2°C were recorded at St Helier in Jersey and at Rumleigh in Devon, while next day the temperature rose to 28.4°C at Wellesbourne in Warwickshire. However, most areas were wet on the 5th with thunderstorms in the south-east and 45.0 mm of rain at Cromer in Norfolk. The fine spell broke on the 20th and the remainder of the month was very unsettled, rather cool and, at times, windy with some heavy rainfall, particularly in the west; at Penmaen near Swansea 75.6 mm fell in about 31 hours from early on the 20th.

The unsettled weather continued for about three weeks in October. South-eastern parts of England were unusually wet; among the many large daily falls of rain were 50.3 mm at Lowestoft on the 4th and 43.5 mm at Worthing on the 13th, while from the 20th to the 22nd rainfall was prolonged and 53.4 mm fell at Little Butser near Petersfield in Hampshire. During the month a total of 233.7 mm of rain, nearly two and a half times the average, was recorded at Plumpton in East Sussex. Drier weather in late October continued into early November. Although there was frost in places at first, on 24 October the temperature fell to -4.3°C at Corwen in Clwyd, it became much warmer and a maximum of 18.8°C was recorded at Ulcombe in Kent on 1 November. But by the end of the first week unsettled weather had returned and while rainfall was frequent daily totals were not particularly large. It was mild generally although on the 14th wintry showers occurred, mainly in the north with some roads across the Pennines being closed for a time by snow. The closing days of the month and early December, however, were mainly dry and colder with night frost at times while on some occasions fog was rather persistent; on 30 November minima of -7.2°C were recorded at Stone in Staffordshire and at Luddington in Warwickshire. On 7 December rain spread from the west and the next two and a half weeks were very disturbed, often stormy and wet. On the 15th gales were particularly severe over northern England with a gust of 78 kn at Leeming in North Yorkshire being the highest there in 18 years of records, although the day was exceptionally mild and the temperature reached 16.3°C at Prestatyn in Clwyd. Snow showers were widespread between the 16th and 18th with some quite heavy falls over northern hills. On the 23rd frost was severe in places with the temperature falling to -10.0°C at Loggerheads in Clwyd. However, temperatures then rose and the remainder of the month was mild and mostly dry. Over England and Wales the period, October to December, was the wettest since 1960 while over Scotland that from August to December was the wettest of any five-month period since before 1869.